

Exhibit 1A  
Engineering Statement in support of  
FCC FORM 340  
**APPLICATION FOR CONSTRUCTION PERMIT FOR RESERVED CHANNEL  
NONCOMMERCIAL EDUCATIONAL BROADCAST STATION**  
(For a minor change in licensed facility)  
WAYG 210A, Facility ID 24772

**Introduction:**

This is an application by Cornerstone University (the Applicant) for minor changes to WAYG 210A, Facility ID 24772.

The applicant seeks to move the station to an adjacent channel, increase the antenna height, increase the ERP and modify the directional antenna parameters.

The applicant proposes the following changes:

- Move from channel number 210 to channel number 209.
- Increase the height of the antenna radiation center to 299 meters AMSL (54 meters AGL, 74 meters HAAT).
- Increase ERP from 4.9kW to 6.0kW.
- Modify the antenna directional characteristics as shown in Exhibit 1B.

No Notice of Proposed Construction or Alteration will be filed with the FAA. The height increase in the existing tower does not require notice or registration.

The proposed changes are minor since the change in frequency is to a first adjacent channel and there is no change in location.

Note that the RF exposure calculations used for part VII-18 of the application used the isotropic model specified in RF Worksheet #1. A more realistic model (The FCC's "FMmodel" program) predicts exposure levels of less than 2% of the general public limits.

This application was prepared using FCC 30-arc-second terrain data.

Joseph M. DiPietro, P.E.  
RFEngineers, Inc.  
August 04<sup>th</sup> 2007

## Section VII Engineering Data:

### Tech Box Data:

1. Channel 209
2. Class A
3. Antenna Location Coordinates
  - 42° 58' 40" N
  - 85° 35' 44" W
4. Proposed Assignment Coordinates, Not Applicable
5. Antenna Structure Registration, Not Applicable
6. Overall Tower Height, 58 meters AGL
7. Radiation Center Height, 299 meters (H) 299 meters (V) AMSL
8. Radiation Center Height, 54 meters (H) 54 meters (V) AGL
9. Radiation Center Height, 74 meters (H) 74 meters (V) HAAT
10. ERP, 6.0 kW (H) 6.0 kW (V)
11. Maximum ERP if beamtilt used, Not Applicable
12. Directional Antenna, Yes, No Rotation. See Exhibit 1B for antenna parameters.
13. Main Studio Location, Yes, Studio is located within the community of license.
14. Community Coverage, Yes, See Exhibit 14.
15. Interference, Yes.
  - a) Section 73.509, Checked. See Exhibits 16, Stations and Proposals requiring investigation.
  - b) Section 73.207, Not Checked.
  - c) Section 73.213, Not Checked.
  - d) Section 73.215, Not Checked.
  - e) Section 73.525, Checked. See Exhibits 19. The ratio of population removed from interference to that added to interference is greater than 2:1 therefore this application is in compliance with this section of the rules, see 73.525(b)(2).
16. Reserved Channel above 220, Not Applicable
17. International Border, No, Canada, See Exhibit 21, the 34dBu contour does not enter Canada.
18. NEPA, Yes.
  - a) Operation of this facility will not have a significant environmental impact. To the best knowledge of the Applicant:
    1. The existing structure is not located in an officially designated wilderness area or wildlife preserve, nor does it threaten the existence or habitat of endangered species.
    2. The proposed changes will not affect districts, sites, buildings, structures or objects significant in American history, architecture, engineering or culture that are listed in the National Register of Historic Places, or eligible for listing.
    3. The site is not located in a flood plain. Nothing is proposed that would require significant changes in surface features such as wetland fill, deforestation or water diversion.
    4. The structure does not require marking in accordance with FAA requirements.
  - b) The Applicant will cooperate with all site users, managers and owners with regard to the cessation of operation or the reduction of operating power, whenever it is necessary to comply with the FCC Regulations and Guidelines on Human Exposure to Non-Ionizing RF Radiation.
  - c) The modeled contribution to the RF environment, 2-meters above the ground, by the proposed facility is less than 148.2uW/cm<sup>2</sup>, or 74.1%, of the maximum permitted value for general public exposure (14.8% of the occupational exposure level). This result was obtained using appropriate methods as described in OET Bulletin 65 and modeling the antenna as an isotropic radiator. There are no other non-excluded rf sources within 315 meters of the tower. Based on this information the proposed facility is in compliance with 47 C.R.R. Section 1.1306 with regards to radio-frequency electromagnetic exposure.
19. Community of License Change, Not Applicable.

## Exhibit 1B Antenna Pattern (Azimuth)

rfSoftware, Inc.

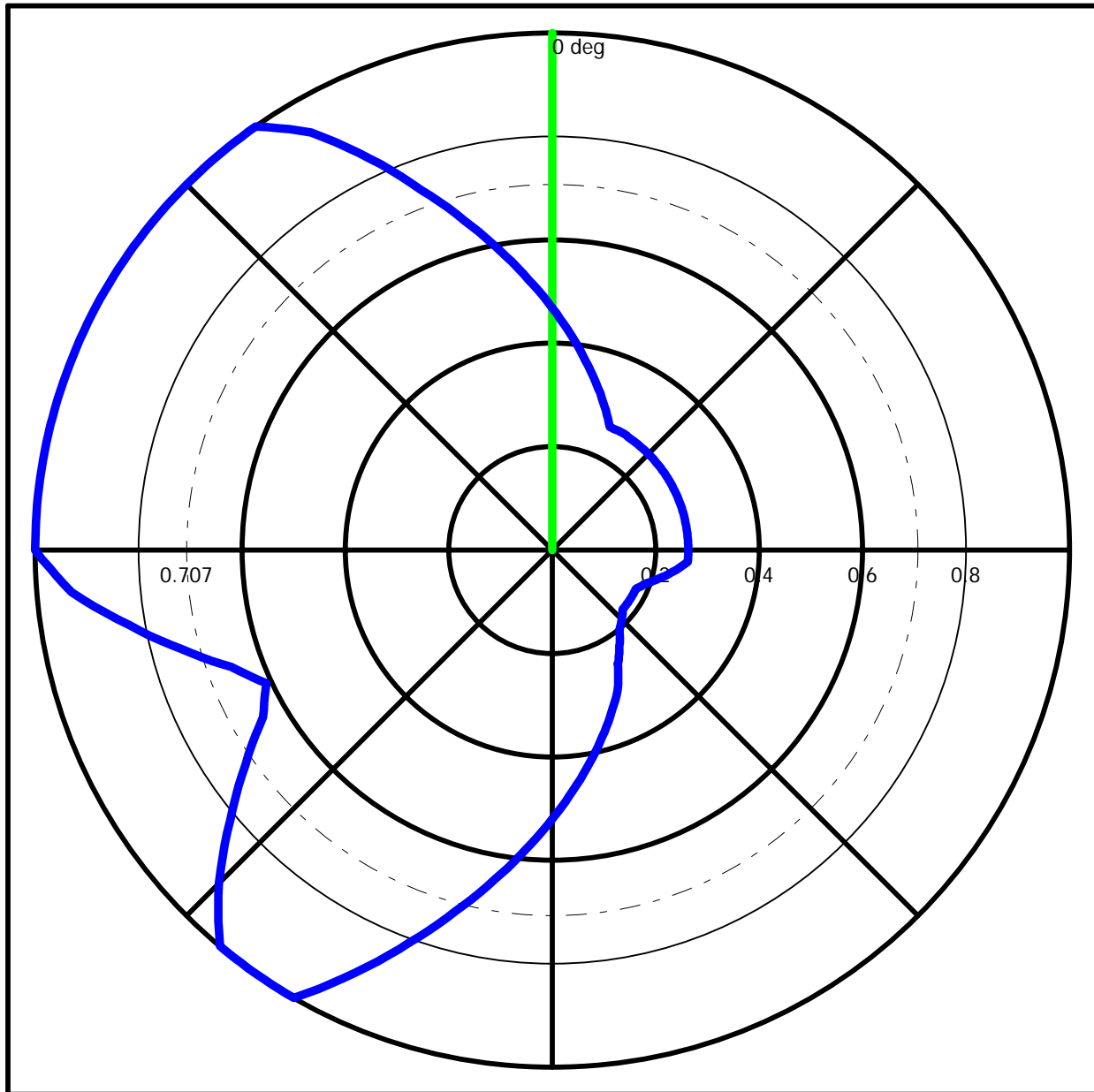
Job: WAYG\_08-02-07.fmj

Description:

rfInvestigator Version 3.2.35

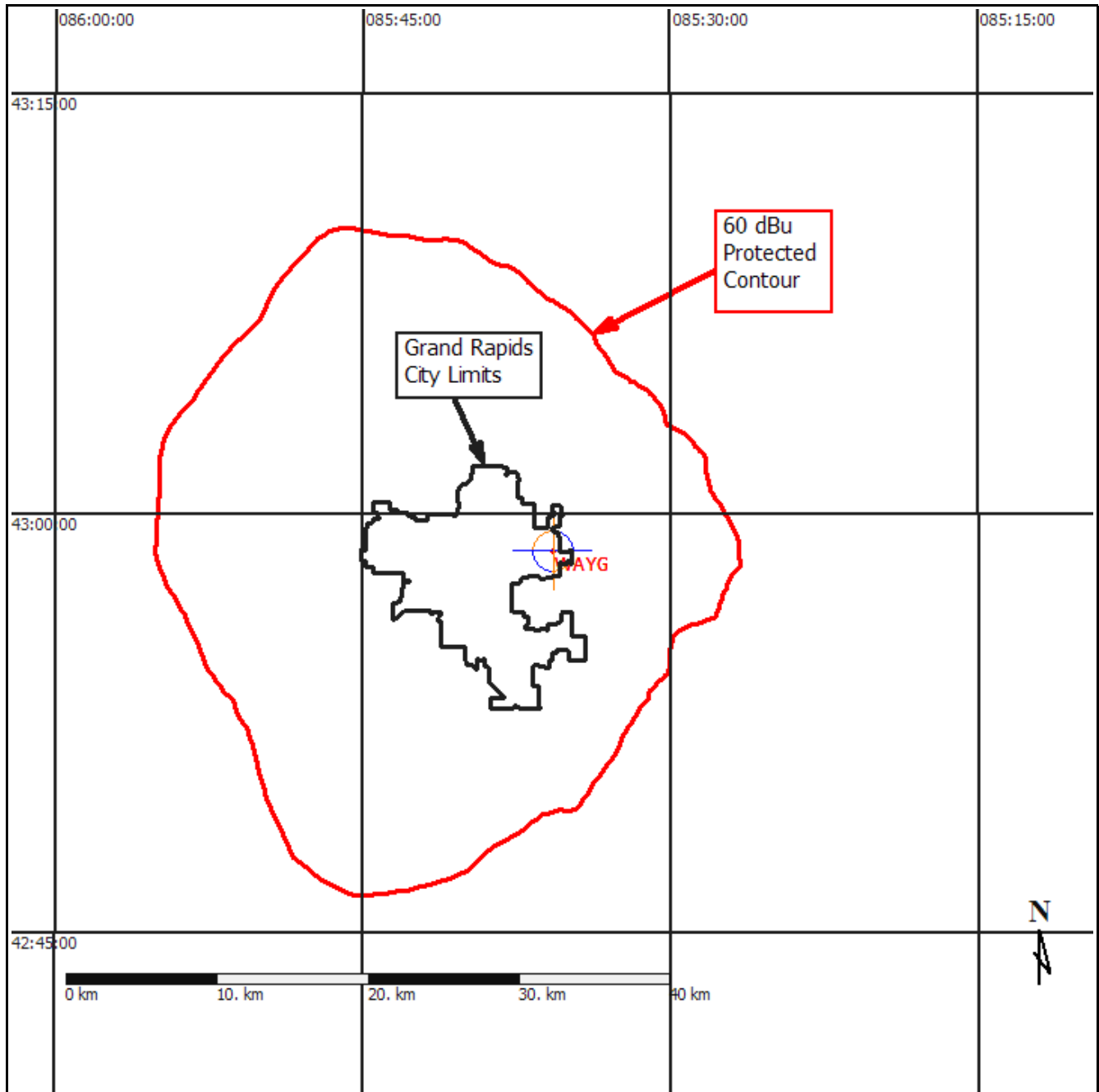
by rfSoftware, Inc.

Date: 8/3/2007 1:54:13 PM



Degree	Field	Degree	Field	Degree	Field	Degree	Field	Degree	Field	Degree	Field
000	0.468	060	0.263	120	0.178	180	0.520	240	0.646	300	1.000
010	0.371	070	0.263	130	0.178	190	0.648	250	0.661	310	1.000
020	0.295	080	0.263	140	0.202	200	0.808	260	0.832	320	1.000
030	0.264	090	0.263	150	0.254	210	1.000	270	1.000	330	0.933
040	0.263	100	0.238	160	0.334	220	1.000	280	1.000	340	0.741
050	0.263	110	0.191	170	0.417	230	0.813	290	1.000	350	0.589

## Exhibit 14



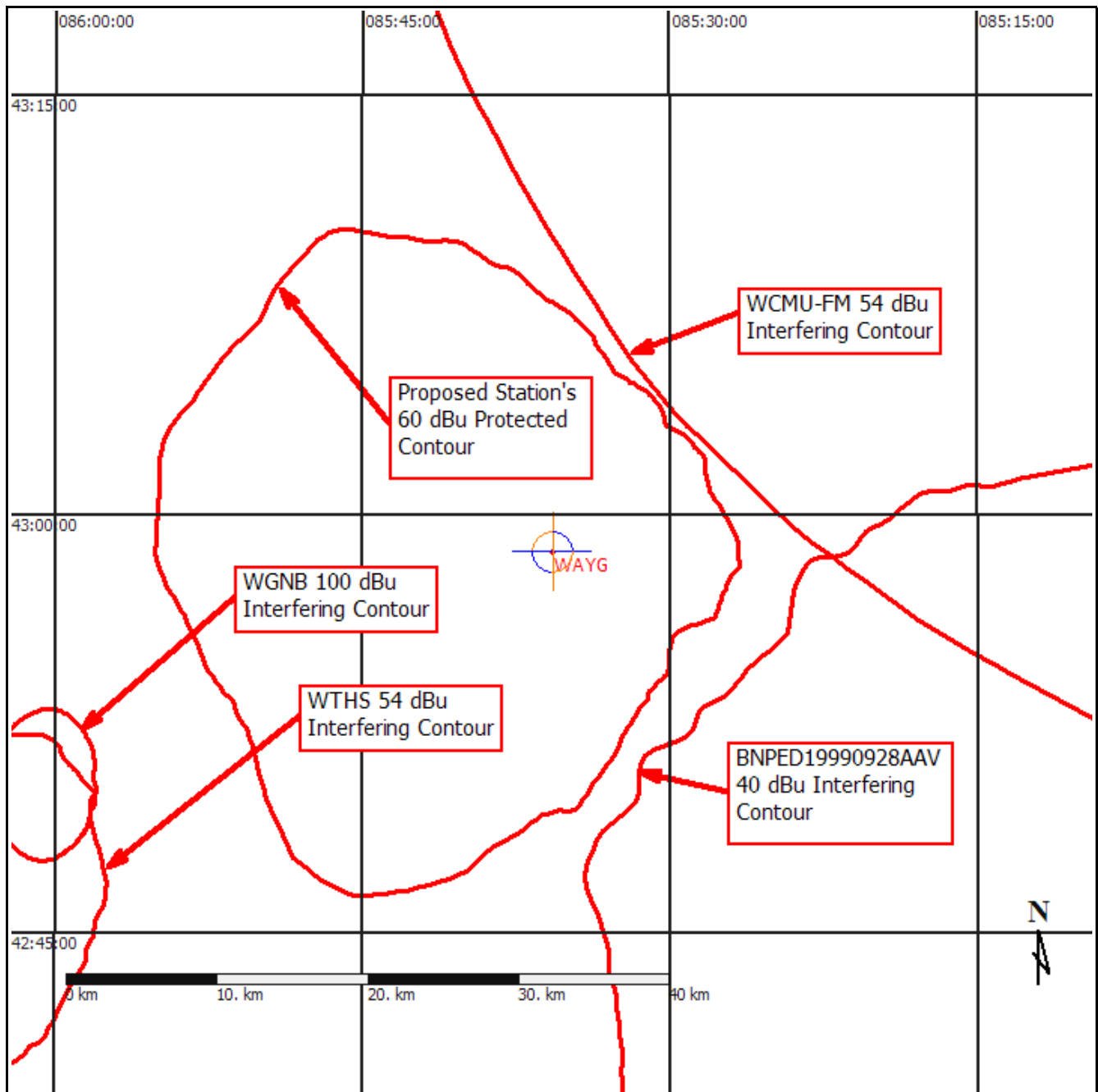
*Coverage of Community of License*

Exhibit 16

Stations and Proposals Requiring Investigation.

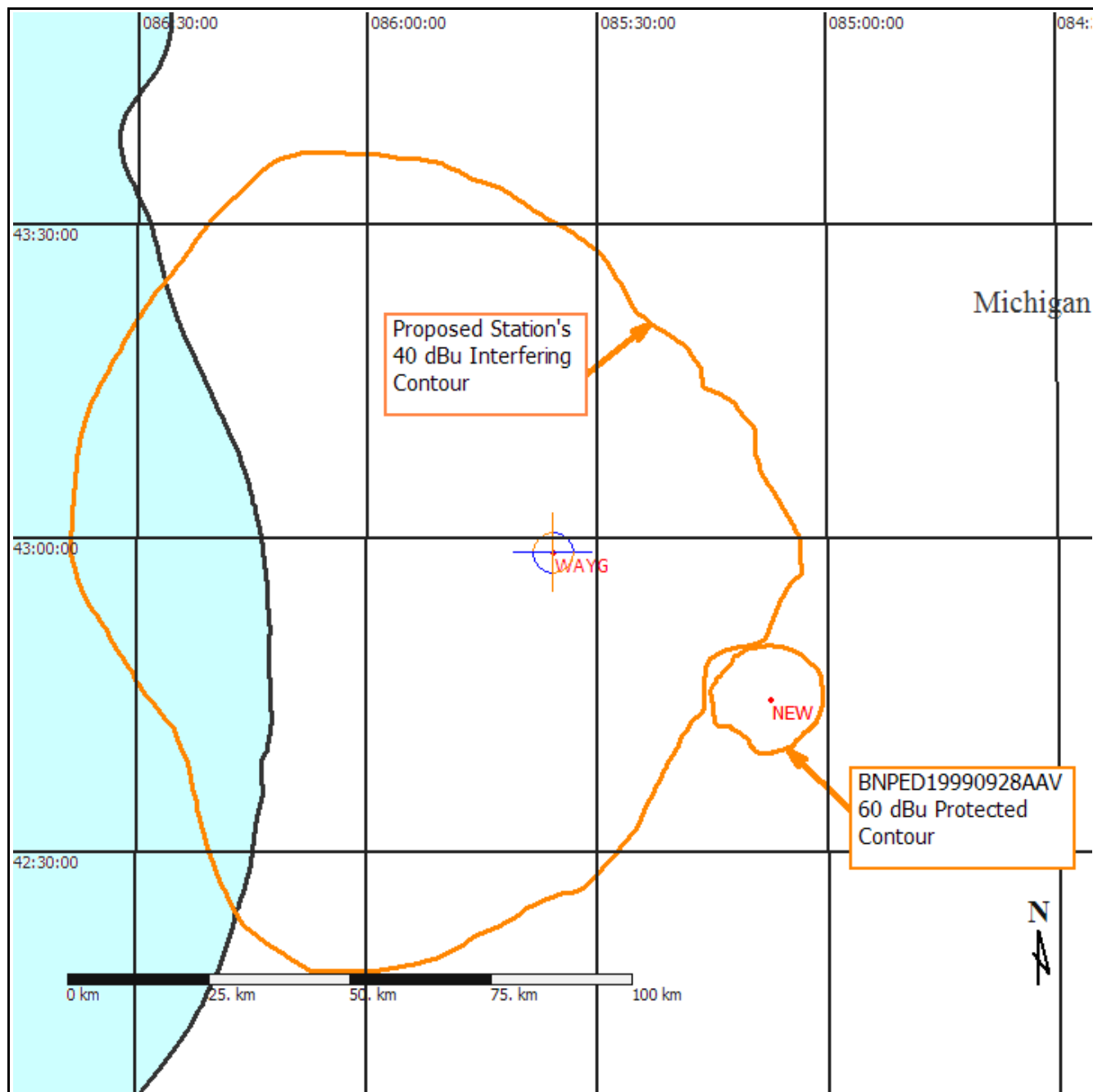
Owner	Callsign	Channel	Class	Status	Latitude (NAD27)	Longitude (NAD27)	Horiz ERP	Vert ERP	Ant AMSL	Ant Rotation	Dir Ant	City Served	State	File Prfx	ARN
CENTRAL MICHIGAN UNIVERSITY BOARD OF TRUSTEES	WCMU-FM	208 : 89.5MHz	C1	LIC	N43:34:24	W084:46:21	100	100	371		0 N	MOUNT PLEASANT	MI	BLED	1085
GREAT LAKES COMMUNITY BROADCASTING, INC.	NEW	206 : 89.1MHz	A	APP	N42:37:20	W085:25:00	0	0.65	337		0 N	HOPE TOWNSHIP	MI	BNPED	19991112AAH
GREAT LAKES COMMUNITY BROADCASTING, INC.	NEW	209 : 89.7MHz	A	CP	N42:44:35	W085:07:25	0	0.4	300		0 N	LAKE ODESSA	MI	BNPED	19990928AAV
BLUE LAKE FINE ARTS CAMP	WBLV	212 : 90.3MHz	C1	LIC	N43:33:00	W086:02:34	100	100	427		0 N	TWIN LAKE	MI	BLED	19901002KB
THE MOODY BIBLE INSTITUTE OF CHICAGO	WGNB	207 : 89.3MHz	B	LIC	N42:50:14	W085:59:17	30	30	355		0 Y	ZEELAND	MI	BLED	19881221KA
HOPE COLLEGE	WTHS	210 : 89.9MHz	A	LIC	N42:47:16	W086:06:02	1	1	245		0 Y	HOLLAND	MI	BLED	19850425LP

## Exhibit 16A



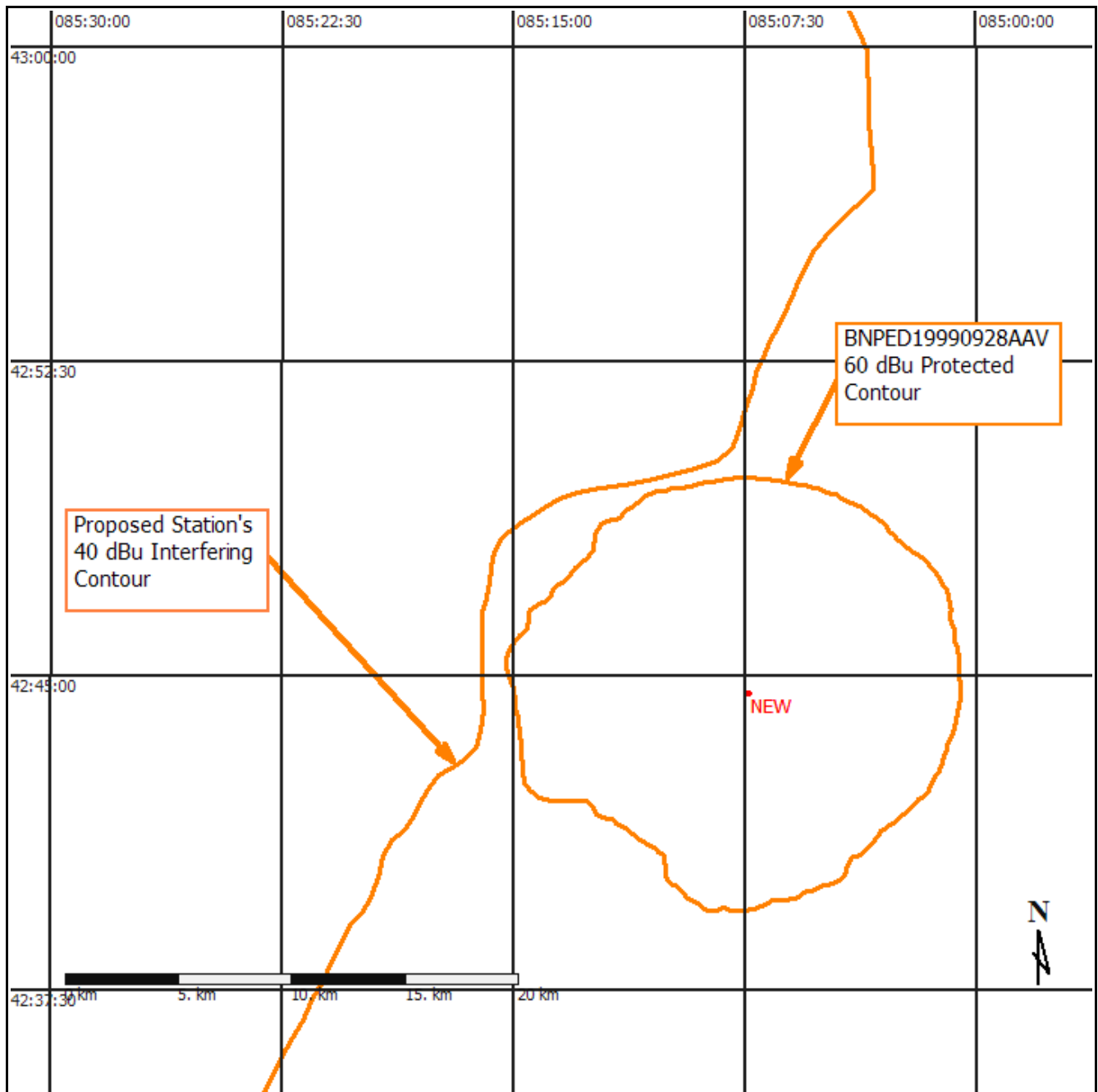
*Proposed Protected Compared to Affected Interfering Contours*

## Exhibit 16B



*Co-Channel Contours*

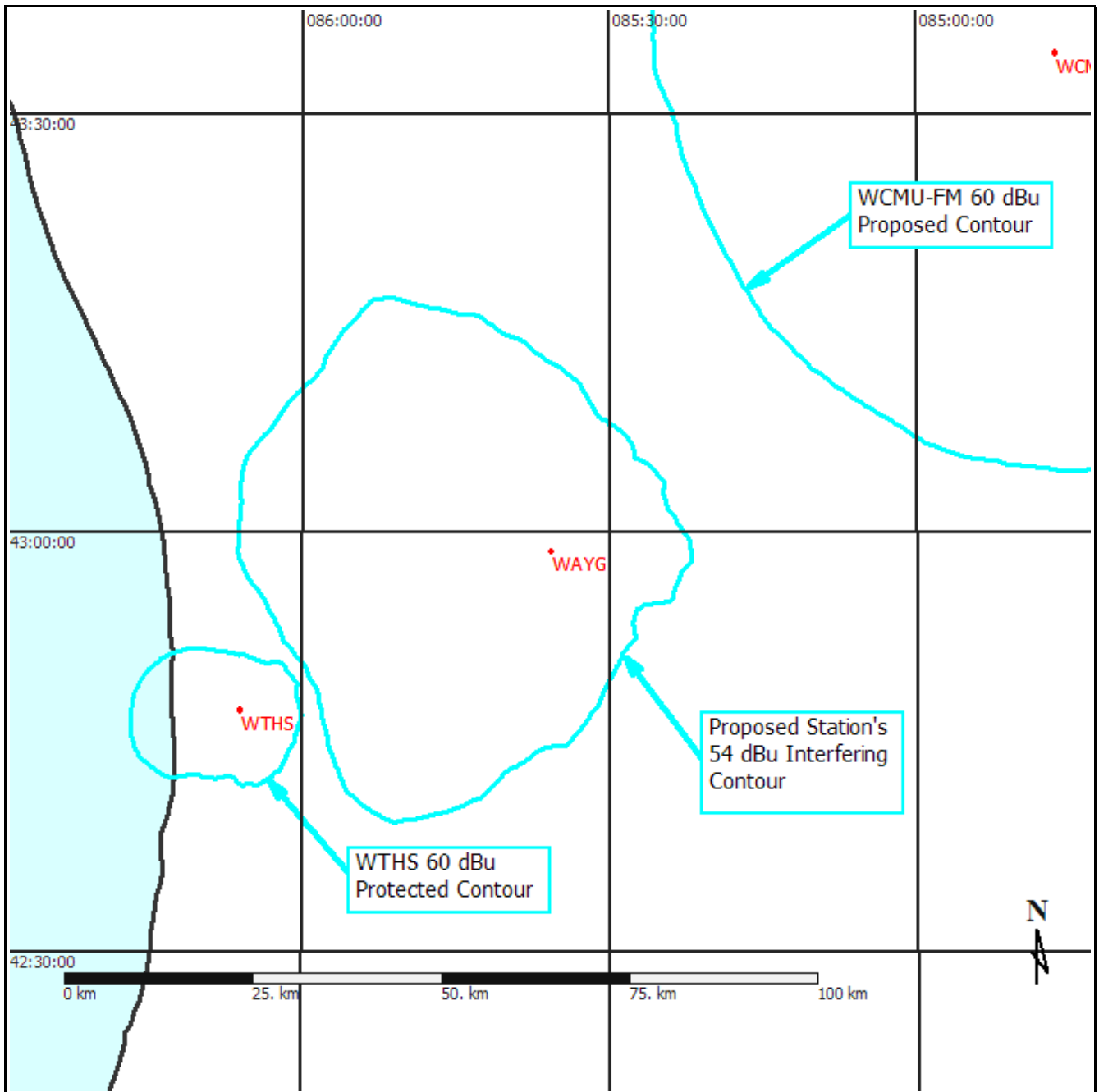
## Exhibit 16C



*Co-Channel Contours, Closeup*

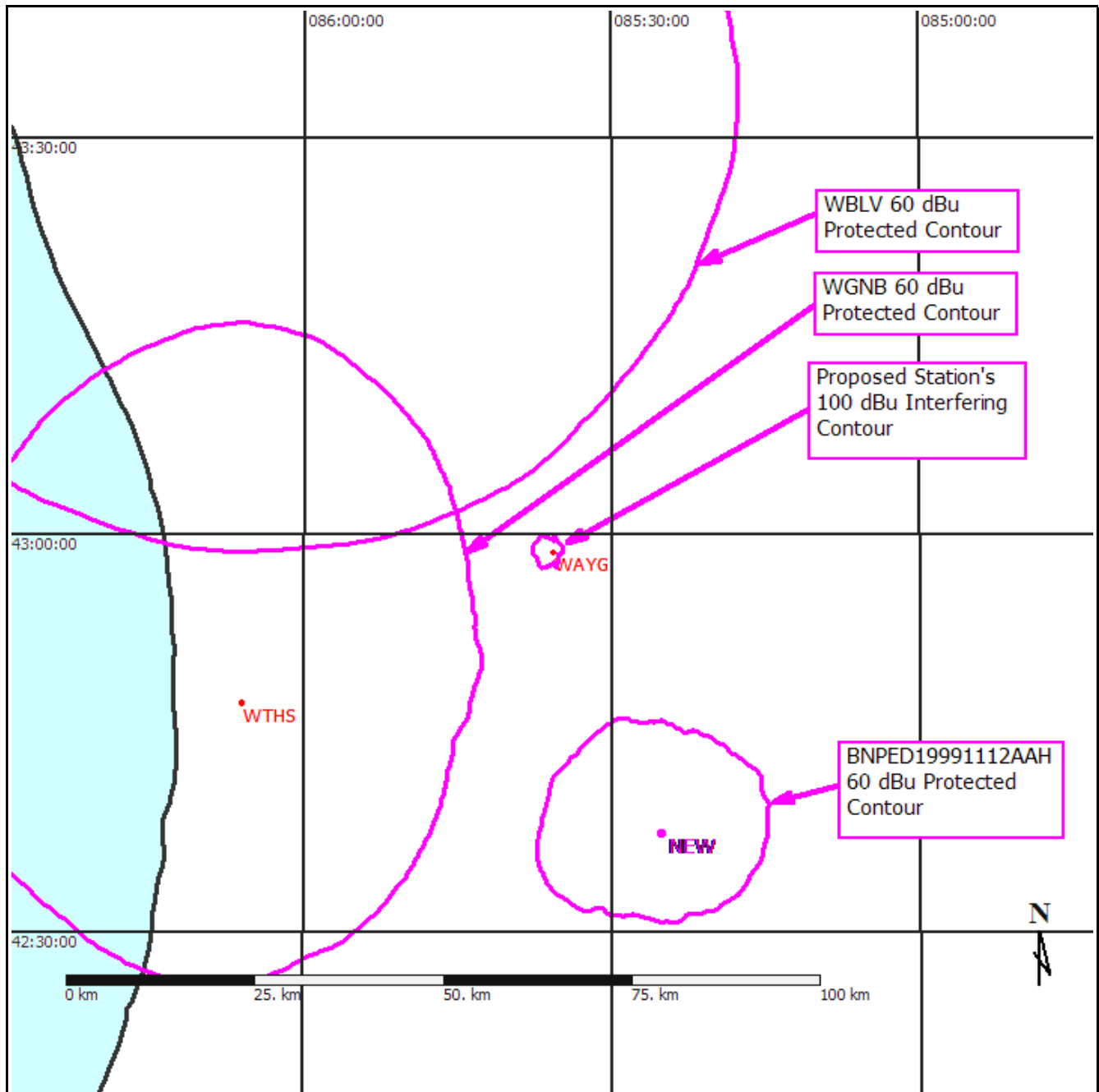


## Exhibit 16D



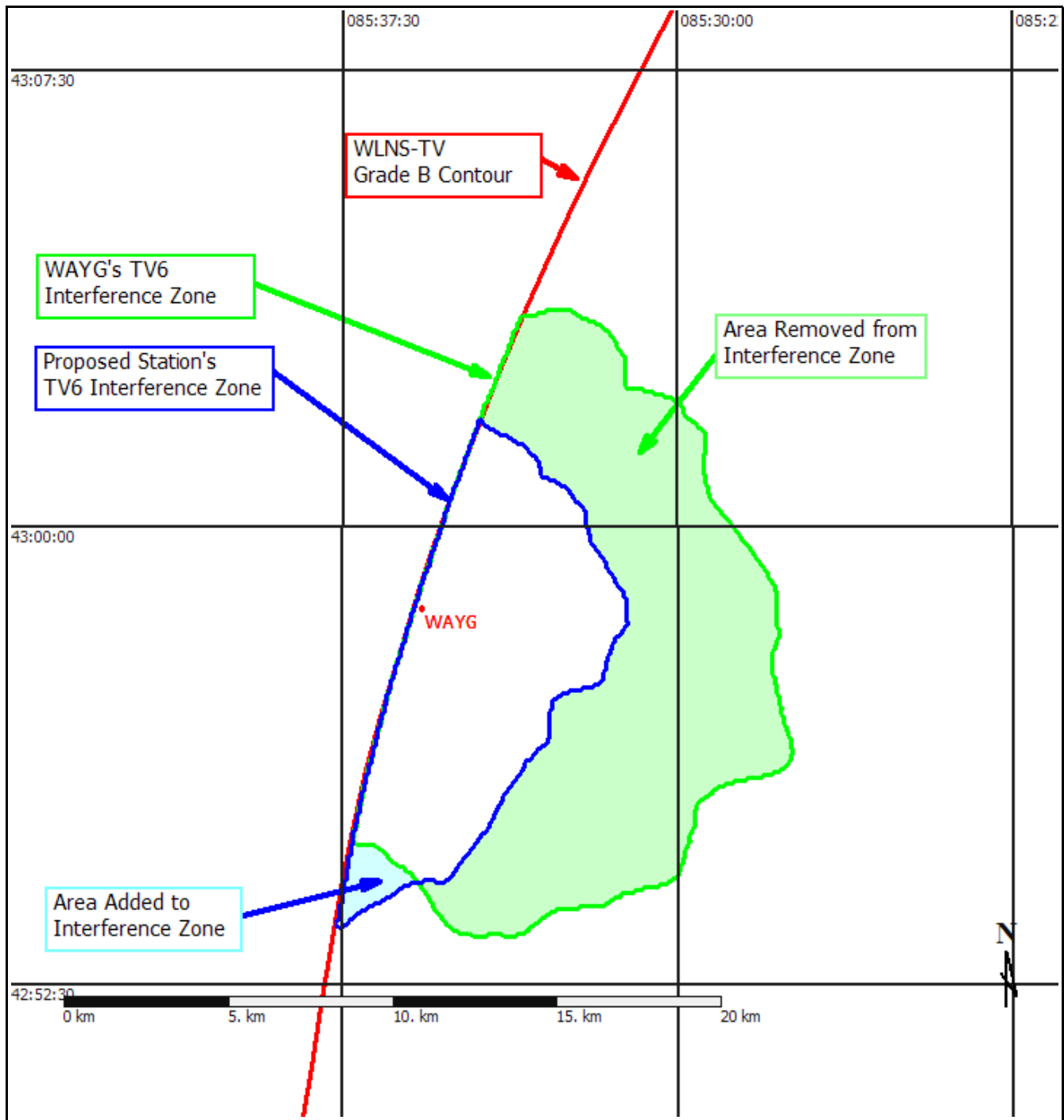
*First Adjacent Contours*

## Exhibit 16E



*Second and Third Adjacent Contours*

## Exhibit 19



*TV6 Interference Zone Comparison*

Population Added	Population Removed	Area Added	Area Removed
3,695	20,726	3.1 km <sup>2</sup>	100.4 km <sup>2</sup>

# Exhibit 19A

## Licensed Facility

FM Station: WAYG  
 : Channel 210  
 : Antenna Height 288 meters AMSL  
 : Max ERP 4.9 kW  
 : Latitude 42.97777777777778  
 : Longitude -85.59555555555555  
 : Directional Antenna: User Defined

TV Station: WLNS-TV  
 : Antenna Height 577 meters AMSL  
 : Max ERP 100 kW  
 : Latitude 42.68868055555556  
 : Longitude -84.37638888888889  
 : Directional Antenna: Omni

Census Block Data:  
 Polygon 1  
 Pop Count = 54554  
 Interference Zone Area = 162.5km^2

Options:  
 Apply 6dB Adjustment for Receive Antenna: Yes

Range of TV Station Contours: 47.00dBu to 52.00dBu

TV Protected Contour (dBu)	Desired To Undesired (dB)	FM Interfering Contour (dBu)
-----	-----	-----
47.00	20.40	67.40
47.50	19.55	67.05
48.00	18.70	66.70
48.50	17.95	66.45
49.00	17.20	66.20
49.50	16.60	66.10
50.00	16.00	66.00
50.50	15.50	66.00
51.00	15.00	66.00
51.50	14.50	66.00
52.00	14.00	66.00

## Exhibit 19B

### Proposed Facility

FM Station: WAYG  
: Channel 209  
: Antenna Height 299 meters AMSL  
: Max ERP 6 kW  
: Latitude 42.9777777777778  
: Longitude -85.5955555555555  
: Directional Antenna: User Defined

TV Station: WLNS-TV  
: Antenna Height 577 meters AMSL  
: Max ERP 100 kW  
: Latitude 42.6886805555556  
: Longitude -84.3763888888889  
: Directional Antenna: Omni

Census Block Data:  
Polygon 1  
Pop Count = 37522  
Interference Zone Area = 65.2km<sup>2</sup>

Options:  
Apply 6dB Adjustment for Receive Antenna: Yes

Range of TV Station Contours: 47.00dBu to 50.00dBu

TV Protected Contour (dBu)	Desired To Undesired (dB)	FM Interfering Contour (dBu)
-----	-----	-----
47.00	20.40	67.40
47.30	19.89	67.19
47.60	19.38	66.98
47.90	18.87	66.77
48.20	18.40	66.60
48.50	17.95	66.45
48.80	17.50	66.30
49.10	17.08	66.18
49.40	16.72	66.12
49.70	16.36	66.06
50.00	16.00	66.00

## Exhibit 21



34 dBu Contour does not enter Canada.